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The Tech.

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THE Glee Club, from the time when it was started, has been a credit to the Institute, and should receive the most hearty support from all students, whether sing-

ers or not. The club was organized last fall, and after some rehearsing gave a complimentary concert to the school, which was much appreciated by all who had the opportunity to hear it. Since then, the club has sung in various places in the vicinity, and was everywhere received with favor. We are now to have another chance of hearing them at home. A concert will shortly be given in Association Hall, for which the tickets are now ready. Reserved seats can be procured from the musical director, and admission tickets from other members of the club. The price of tickets has been placed so low that it is within the reach of all, and we hope that all will avail

themselves of this privilege of hearing a good concert and helping support a worthy organization. The club is at considerable expense in procuring new music and other necessary things, and a good attendance at the next concert will do much to strengthen its financial condition. Let every student go to the concert, and give the club a good reception at home.

AT the present time the country is excited by reports of gold found in enormous quantities at the Cœur d'Alenes, in Idaho, and as a consequence there has been an immediate rush of seekers for gold to that region. No authentic information has yet been received as to the extent or richness of the placer diggings; but that gold exists there along the streams is unquestionable. The Eastern imagination is apt to be taken with reports of yields of twelve to twenty dollars a day to each man; of wages, to any one who will work, of from five to eight dollars per day; of the reported aggregate of \$18,000 worth of dust taken from one claim, the "Widow," and at once thinks it the place to go to, without duly weighing the other side of the question; the presence of a multitude already there, most of them old miners, who, perhaps, cut their wisdom teeth in California, and beside whom one's chances for gaining experience would be vast, but his chances of getting gold at their minimum. The cost of the bare necessities of living is enormous, and if one desired to make money his wiser way would be to go out there as a seller of "eggs, bacon, and boots," which command a premium.

The gold fever of '49 is beyond the memory of most of our miners, to whom this is especially addressed; but the recollection of personal experiences told to the writer comes vividly to mind. One hears more often, in cases of great discoveries of gold, of rich findings in special instance; but of the thousands who are unsuc-

cessful whose lives are ruined by the absence of any sort of restraint, and the prevalence of the worst features of men's characters, of the misery brought upon the mothers and families left behind, we hear only by accident, or in the history of after years.

A few weeks will do much to solve the problem, and gold will be plentiful, or the locality be voted a failure; in the latter case, an undeserved odium will remain with the place. Of the crowds which have flocked thither, many will never come East again: attracted by the easy life in the West, they cut their moorings and start, probably, upon a life of adventure.

IT is with regret that we are obliged to note the recent disturbances in the chemical laboratory among the second-year miners and chemists, which resulted in the suspension of some of their members. The course of Prof. Wing in calling a class meeting at which the members were free to express their opinions in regard to the matter, and leaving the remedy to their good judgment and honor, is one which must meet with the heartiest commendation, and which we hope will be adopted by our other professors if any trouble happens to arise in their classes.

FOR the benefit of those interested, it may be stated that exchanges are placed in binders shortly after their receipt, and as a rule only the la'est two numbers are kept there. Earlier issues for this year may be obtained in THE TECH bookcase. It is desirable that any of these taken out be returned to their proper places, otherwise this use of them may be discontinued.

IN an editorial in the last TECH, in regard to the cost of underground wires, we were made to say that "the cost . . . would be . . . for the cables, about \$150 per mile; so that, in round numbers, we may say that one thousand miles would cost \$150,000 per mile, or \$150 a mile for each circuit." The correct statement is that, in round numbers, the cost would be about \$150,000 per mile for one thousand *wires*, or \$150 per mile for each circuit.

Papyrographs.

THE morning light was breaking fast
As "notes" in piles before him massed;
A youth toiled on with weary eyes,
And muttered low, "How I despise
Papyrographs!"

His task was hard; all night dismayed
He'd sought to catch th' idea conveyed
By purple page from stencil poor,—
But still he groaned, "I can't endure
Papyrographs!"

A student deaf to every sound,
Half buried 'neath his "notes" was found,
Low gasping, "Welcome, heavenly prize!
I ne'er shall see in Paradise
Papyrographs!"

F.

The Study of the Natural Sciences.

A PAPER READ BEFORE THE 2 G SOCIETY.

THERE is an impression among the majority of people that Science is something dark, deep, hidden, and abstruse. In fact, many believe that the very word *science* indicates something unfathomable, something that cannot be comprehended by ordinary people. Some believe that science is allied to alchemy, astrology, or witchcraft, and that knowledge of it is to be shunned as one would shun the plague or other loathsome disease. Some believe that it is synonymous with atheism, infidelity, and godlessness. But it is none of these. One of the brightest scientific lights of the nineteenth century has given one of the most expressive definitions of science that could be given. He says, "Science, I believe, is nothing but *trained and organized common-sense*."

It is of the natural sciences that we wish to speak to night. Natural science is the knowledge of the laws governing the forces of nature.

Nature is a term employed to signify all the bodies of the universe collectively. These bodies, organic and inorganic, are subject to a variety of changes. The agents or causes of these changes may be either internal or external to the bodies. It is the object of natural science to investigate nature with reference to these changes and their causes.

"All the phenomena of the physical world arise directly from the action of forces upon the various forms of bodies."

It is the province of natural science to inquire into these phenomena, and, if possible, to formulate the laws which govern both the causes and effects.

For its data in reference to these causes and effects, science relies upon observation and experiment.

By observation we note any changes that take place in the conditions or relations of any body or its elements, as they spontaneously arise without any interference on our part; whereas, in the performance of an experiment, we purposely alter the natural arrangement of things to produce the result that we desire.

Thus, if we notice that in winter water becomes converted into ice, we are said to make an observation; if, by the use of freezing mixtures or rapid evaporation we produce ice from water, we are then said to perform an experiment.

Similarly, if we balance a compass-needle upon the sharp point of a fixed vertical rod, and note that the marked end always points towards the north, we have made an observation. But if we balance a small steel bar upon the pivot, and find that it stands in any position in which we place it, and then remove it, magnetize it, and, upon replacing it, find that it rotates until the marked end indicates the north point, as in the first case, we are said to have made a series of observations, performed an experiment, and then made a final observation which confirmed our hypothesis that the bar would align itself in a north and south line after magnetization.

These observations and experiments are next subjected to mathematical analysis and calculation, from which are deduced what are known as "the laws of nature," or "the rules that like causes will invariably produce like results." Where possible, these laws, for the sake of brevity, are expressed by mathematical formulæ.

When, however, these laws are not determined with sufficient exactness to admit of

their being expressed with mathematical precision, we must be content with inferences and assumptions based upon analogies, or with probable hypotheses for explanation and deduction. "An hypothesis gains in probability the more nearly it accords with the ordinary course of nature, the more numerous the observations and experiments on which it is founded, and the more simple the explanation it offers of the phenomena for which it is intended to account." If the number and range of these observations be sufficiently great, and the explanation of the observed phenomena be logical and reasonable, the hypothesis may attain to the dignity of a "*theory*."

If no exceptions can be detected or discovered in the phenomena which attend the action of certain forces, and the scientist is enabled to predict with certainty the logical sequence of events which will take place due to the action of these forces together with all the attendant phenomena directly dependent upon said action, then the theory is entitled to be removed from the realm of probability and to be recorded as one of the laws of nature.

The field of observation is indeed a large one. For convenience, I shall divide it into three heads, conscious, however, that the lines of demarcation are so convoluted and interlocked that they must be but arbitrary at best.

Actual observation may be (1) telescopic, (2) macroscopic, or (3) microscopic. (1.) Telescopic observation enables us to penetrate the depths of space in search of truth, to explore mysteries which but for its intervention would have remained locked in the bosom of space unknown and unseen by the eye of man. Who shall estimate the value of the telescope to science?

To adequately chronicle its discoveries, their number, importance, and value would require volumes. Let it suffice to direct attention to a few of its best known results.

It was to the use of the crude and imperfect instrument of Galileo that we owe the discovery of the sun spots, the mountains in the moon, and the existence of Jupiter's satellites. From

this humble beginning astronomical science has slowly but surely advanced, until now her instruments of precision have reached a high degree of excellence. To these advances we owe the discovery of the nebulae, those nascent worlds of dissociated star-dust, whose atoms are whirling through their molecular orbits in obedience to the universal law of gravitation.

To telescopes we owe the discovery of the magnificent group of rings and satellites that accompany the planet Saturn in his orbit around the sun.

The same instrument detected the planets Neptune and Uranus with their faint satellites, together with the numerous minor planets. To it we are indebted for the discovery of double, triple, and multiple stars. Many double stars exhibit the curious and beautiful phenomenon of complementary colors. In these instances "the large star is usually of a ruddy or orange hue, and the smaller one of blue or green." This may be but the effect of contrast, but there is no reason to doubt that in many cases color exists.

The latest great discovery made by astronomical science was that of the diminutive moons of the planet Mars, that near physical relative of our earth.

These interesting objects were made known to the inquiring gaze of man through the medium of the great equatorial refractor at Washington. Thus have we glanced at a few of the results of telescopic observation. Thus, through the evolution and development of this potent instrument for fathoming, feebly it is true, the depths of inter-stellar space, have we succeeded in wresting from that boundless infinity many things which but for it would still be enshrouded by an unpenetrated veil. Thus, in less than three centuries, have we passed from the imperfect and insignificant glass of the Italian astronomer to the magnificent refractor at Washington, whose definition and space-penetrating power exceeds even the wildest dreams of the seventeenth-century philosophers.

May we not congratulate ourselves that this

triumph of mechanical art, this crowning glory of astronomical and optical science, was made upon the sacred soil of the Commonwealth of Massachusetts?

(2.) Macroscopic observation comprehends all observations of the outward or visible world made by the human eye. It is the means by which a knowledge of the objects surrounding us is obtained. It is the most general kind of observation with which we are acquainted. It is a term borrowed from the science of petrography, and is here used to comprise all visual observations that are not either telescopic or microscopic. It is essentially the observation most used in our every-day life. It enables us to see and enjoy our friends, our homes, our landscapes, and our skies. This method is employed by the infant and the patriarch, the plough boy and the philosopher, the ignorant and the enlightened, the untutored savage and the cultured denizen of the metropolis. It was in use untold centuries before the invention of either telescopes or microscopes. Through it many of the phenomena of the organic and physical worlds have been brought to the notice of the mind of man, without, however, eliciting rational, or, in many instances, even intelligible interpretations. By it we distinguish the difference between an animal and a plant, between a rock and an apple, between daylight and darkness, between the lightning's flash and the gleam of a candle.

(To be continued.)

Winter Weather in Boston.

THERE is no subject on which people think they can speak with more authority than that of the weather. As a case in point, let us take the past winter, which is popularly supposed to have been a very cold one. Let us test the statement by reference to the records of the United States Signal Office in this city, copies of which the writer has at hand.

The average temperature of the months of December, January, February, and March for the past thirteen years is 29.7°. This winter

the mean for these same months was 29.2° . If we compare the months separately, we shall find that last December was 1.1° colder, January 2.8° colder, February 3.0° warmer, and March 0.9° colder than the normals for those months. It may be said, incidentally, that January is ordinarily our coldest month, having a mean temperature of 26.5° . The above shows that the cold has been nearly that of an average Boston winter. If we take the extremes of temperature we shall also see that no records have been broken, though it is true that the minimum temperature is within a degree of the lowest observed since the establishment of the Signal Office. The lowest temperature during these thirteen years was -13° in January, 1882, and the highest during the four cold months of the same period was 72° in March, 1880. This winter the minimum was -12° in December, and the maximum 60.5° in March.

Let us also examine the precipitation as a matter of interest. The snow fall at the Signal Office is measured as water, ten or twelve inches of snow being equivalent to an inch of rain. The average amount of snow and rain for the time before mentioned is 16.40 inches. For the same months of the past winter the total is 20.58 inches, which is a very large excess. Generally the wettest winter month is March, with an average of 5.19 inches; but this year the greatest precipitation, 6.27 inches, occurred in January.

A feature of the past winter was the extremely low barometer which occurred in February. A corrected reading of 28.979 inches was obtained, and this has only once been exceeded since 1871. This great barometric depression was not attended by a storm of corresponding severity. The greatest velocity of the wind was 48 miles an hour from the southeast in January, which is unusually high, though for a short time it is said that a velocity of 72 miles an hour has been recorded here.

One marked characteristic of the winter, and one which everybody has complained of, has been the great number of gloomy days. Thus, during the month of February, there were 18

cloudy days, 10 fair days, and but 1 clear day, while rain or snow fell on 20 days. It is also stated that out of 197 days since September 1, there had been 105 stormy days and only 45 clear ones. Thus it seems that the winter of 1883-84 may be not inappropriately called the "Dark Winter."

A. L.

Daniel Pratt.

THE illustrious Daniel Pratt, that famous orator, poet, and philosopher, has been once more in our midst. His late lecture on "Evolution, Revolution, and Poetry, or the Immutable Circumlocution of Scientific Volubility," has attracted much attention from the press, and an intelligent public impatiently waits for the new edition of his "Poems à la Rhapsodie Chelseanea." By special favor we have been allowed to transcribe a few choice selections for the readers of THE TECH, for whom the gallant general has still a feeling "sui generis." The first lines are replete with a hidden sentiment of melancholy:—

"Some years ago, — an hundred, more or less, —
When Prattville, Chelsea, was a wilderness,
When Woodlawn Graveyard was a pasture shade,
Its virgin soil unbroken by pick or spade,"
Great Daniel Pratt was born!

Space will not permit us to trace all the meanderings of genius in his life, and we pass rapidly to a point where he is compared to —

"Susan B. Anthony, Mrs. Lucy Stone,
Old Horace Greeley, or the 'favorite son,'
Richard the Third, or Richard, Duke of York,
The Witch of Endor, and Joan of Arc."

We heartily concur in the sentiment expressed in the closing "feet" that —

"A grateful country will record his name
In golden letters on the scroll of fame."

We cannot leave this inspiring subject without submitting with pride the following tribute to THE TECH, which fell, or rather walked, off the end of Gen. Pratt's pen:—

A BRIEF TRIBUTE TO THE TECH.

The Tech is Rapidly growing into Popularity

and it is Destined to command the Notice of the Press and Educated World — genius and Logic *will* Tell like the Sun over 1500 000 000 people in Europe, Asia Africa and America. increase of population 500 000 000 people in the last 100 years. Over 3000 languages spoken in the world; the English Language is spreading with Great Rapidity. The Soil and Mind of man are not one millionth part developed into axioms and Maxioms!

DANIEL PRATT
The Great American Traveller.

Communication.

[The Editors do not hold themselves responsible for opinions expressed by correspondents.]

TO THE EDITOR OF THE TECH:—In a recent number of THE TECH appeared an article advocating the extension of the course at the Institute to six years. While coinciding with the sentiments inspiring this article, the writer wishes to disagree with this proposal.

The work done at the Institute is too severe. For a student pursuing his studies faithfully, the mental strain approaches, perhaps exceeds, the intellectual elastic limit. To reduce the high standard of resultant excellence is a remedy which will find no favor among the alumni, although to many a mind a long step in this direction was taken when Prof. Howison severed connection with the school.

Of the more recent changes in the engineering departments, it is a pleasure to say that they meet the approval of the large majority of the graduates.

It is an easy solution of the difficulty to say the course should be extended; but we must consider that this step will necessarily increase, almost proportionately, the expense to be incurred by the student. Unfortunately, to a great number of the patrons of the Institute, the annual budget is an element inspiring most rigid calculation, and an increase of twenty-five per cent in the outlay would cause the relinquishment of the scheme of education by a

class of persons among whom will always be found the best students of the Institute.

The scheme which the writer would propose is that which has always been the idea of the corporation, — to exalt the requirements necessary for admittance.

Ten years ago, — and the conditions have changed little since, — a boy of fifteen who had faithfully pursued his studies in the public schools and who had only partially completed his high-school course, was fitted, — we will not say for the Institute, — but to pass its entrance examinations and could have studied for three years Latin or Greek.

How soon the same boy could have been fitted by the narrow and mistaken method of preparatory schools the writer does not venture to estimate; but he will assert, — and in the opinion is sustained by every graduate with whom he ever conversed, — that no boy at the age of fifteen or sixteen is fitted physically or intellectually for that philosophical, mathematical, imaginative, and speculative hothouse known as the Institute of Technology.

The studies at the Institute should begin where our public free schools stop. These schools, it is true, give as a rule only a superficial knowledge of the many subjects they pretend to teach, but every student knows that the most elementary knowledge of a subject taken up at the Institute is the saving condition which oftentimes determines his success. For this reason the writer would advocate an examination on German, trigonometry, physics, astronomy, physiology, zoölogy, botany, geology, chemistry, and physical geography.

Proficiency in any seven of these might make up for ignorance of the remainder, as the extra knowledge possessed would allow some spare time on one subject which could be devoted to those in which a deficiency existed.

It is almost a safe assertion to make that, of those graduating from the Institute with a creditable record, eighty per cent come to the school possessing the knowledge embraced in the above specifications, and that this knowledge was an important factor in their success. If

this is true, the admittance examinations to the Institute may be styled a system of false pretence, enticing to the school numbers of persons who cannot succeed unless by neglecting all rules of physical and mental hygiene.

In addition to these qualifications, a better knowledge of French might be required, and an acquaintance with Latin or Greek, while not perhaps to be insisted upon, might be placed to the credit of the applicant.

With these requirements, and the minimum age placed at seventeen, it is to be hoped that as high a grade would be reached and less fall by the wayside. Primary-school education at the Institute would cease and the "Kindergarten" be no more.

If any are in doubt as to the bearing of this last observation, let them reflect upon the following item of history:—

Prof. (to Sophomore class): "Gentlemen, this colored map before you is known as Guyot's map. The mountains are colored a dark brown, the tops being touched with white to represent snow. The lower levels are colored a lighter brown and the lowest lands of all around the coast and elsewhere are tinted green.

"This part to which I point, gentlemen, is green. Is this high or low land?"

Let it be said in simple justice to the memory of the class of '79 that with one accord they answered "high!"

It seems as if it could be in this way only that the school can keep that proud position which it has occupied in the past and which it should always strive to surpass.

H. H. C.

Steelton, Pa., March 23, 1884.

At Princeton, there has been great excitement over a fanciful system of espionage, supposed to have been undertaken by the college authorities. The matter as stated in the college *Mercury* is thus: "At Princeton, there has also been great excitement, and, though the results to individuals is not as disastrous, the harm to the college is almost as serious. One morning the students found a letter in their post-office boxes calling their attention to the

methods employed by the Faculty in disciplining those whom they governed. A mass meeting was held and many serious charges were made against the dean of the Faculty and against a certain professor. A system of espionage, it was claimed, was employed. Many men weepingly asserted that their poker decks had been stolen from them, that brakemen on the Trenton trains had been questioned on many points, and that the town barber had turned college informer. As befits mass meeting, resolutions were drawn up and a committee of investigation appointed. Everything was prepared for a genuine sensation, when the student who had made the most serious accusation 'crawled' (as the Princeton man would say), the owners of the poker decks said that they might be in error as to the disappearance of the same, and every one else acknowledged the possibility of his being mistaken."

PHOSPHORESCENCE IN LIMESTONES. — A good example of phosphorescence in limestone was seen recently in a specimen from Utah, which emitted a lurid red light when struck, scratched, or heated. The glow lasted from half a second, when lightly struck, to a much longer time, as the result of a blow. The specimen, on examination, proved to be almost perfectly pure carbonate of lime with very slight percentage of impurities. It was loose grained, white, and crystalline, the grains being but slightly coherent, and much resembled a soft sandstone. It crumbled easily between the fingers, forming a coarse sand. When heated in a glass tube over a flame, it glowed with a deep red light, which lasted a minute or more after withdrawing the flame. After two or three heatings the phosphorescent property disappears. Corresponding effects were produced after examination of numerous specimens from a limestone from India, which also resembled externally the Utah stone. In each case the phenomena are probably due to a disturbance of the loosely aggregated crystalline particles, whether such be produced by percussion, friction, heat, or decrepitation.

Noticeable Articles.

NINETEENTH CENTURY, March. — "My School Days from 1830 to 1840," by the Dean of Westminster. A very pleasant paper by the successor of Dean Stanley, Dr. Bradley, formerly head master of Marlborough, one of the great schools of England. The youngsters of to-day may thank their stars that the world moves, even in matters educational. "Everything was learnt by rote," he says of his first school. The lists of kings of England, of the metals, and of the planets were repeated one after another without interest and without discrimination. I really think that we might almost without reproof have substituted any one for the other. This reminds one of little Paul Dombey to whom "Whether twenty Romuluses made a Remus, or *hic, hæc, hoc* was Troy weight, or a verb always agreed with an ancient Briton, or three times four was Taurus, a bull, were open questions." Dr. Bradley himself was no such teacher; and the paper is full of capital suggestions about education and self-education.

CONTEMPORARY, March. — "Frederick Denison Maurice," by Rev. J. L. Davis. A notice of the recently published life of a good man, who would have been canonized as a saint if he had lived in the Middle Ages.

"The Amusements of the People," by Walter Besant. Read Mr. Besant's very pleasant novel, "All Sorts and Conditions of Men," in which these ideas are supposed to be carried out in a poor district in the West End of London by a delightful heiress in the disguise of a milliner.

THE CENTURY, April. — "The White House," illustrated.

HARPERS', April. — "A Lover's Pilgrimage" (to Verona), illustrated.

"The Hohenzollerns," illustrated with portraits.

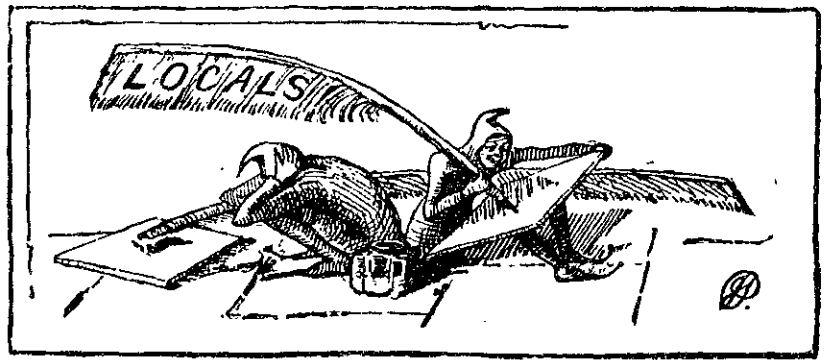
"Modern Sanitary Engineering, by W. P. Trowbridge.

The frontispiece this month, a bust of Murillo's Immaculate Conception in the Louvre, is a very beautiful piece of engraving.

MACMILLAN'S, March. — "James Hope-Scott," by Sir Francis Doyle, a lively account of the Roman Catholic husband of Sir Walter Scott's grand-daughter and heiress of Abbotsford.

"A Social Study of Our Oldest Colony," *i. e.*, Virginia.
W. P. A.

We have received *Outing*, for April, which is now beginning its fourth volume. The present number confirms our hitherto good opinion of the magazine, and is well worth reading. The publication of an English edition of *Outing* is begun with this number under most favorable auspices, and we prophesy a brilliant future for it.



Go to the Glee Club Concert.

Last week was a good example of New England weather.

Mr. David Van Alstine, '86, has been elected a member of Sigma Chi.

Several Institute men are rehearsing with the Wagner Festival Chorus.

We are sometimes surprised at the amount of musical and *theatrical* talent at the Institute.

Only five weeks more before the annuals. Now is the time to "grind."

The first-year architects are revelling in their now problem of a temple-tomb.

The 2 G Society held its regular meeting on Tuesday, the 8th, when important business was transacted.

Prof. Vose has been elected president of the Boston Society of Civil Engineers for the ensuing year.

The second-year civils and miners have begun their spring field work, levelling.

We learn with great regret that Mr. Herbert G. Pratt, '85, has been obliged to abandon his studies and to go South for recreation.

A quartet of stringed instruments with piano accompaniment is rehearsing for the next meeting of the Junior class.

Quite a large delegation from the Institute were present at the casting of the second large gun at the South Boston foundry.

President Walker is prominently mentioned as a delegate to the Republican National Convention at Chicago.

At our recent athletic games, Mr. P. R. Fletcher put the shot a distance of thirty-three feet seven inches, breaking the record for our gymnasium. Thirty-three feet six inches was the score at the last Harvard games.

"If it were not for evolution and revolution there would be no molecules." — *Gen. Daniel Pratt.*

Photographs of the '86 tug-of-war team, which defeated the Harvard Law School team at our last games, can be obtained of Mr. Shove, '86.

The bad weather of last week prevented the miners' and chemists' excursion to Fitchburg and the bicycle club's run on Fast Day.

The Institute Chapter of Sigma Chi held its anniversary dinner at Young's on Friday, March 21. Thirteen members were present.

The second-year mechanicals recently spent an interesting afternoon in examining the looms of the weaving department of the School of Design.

The certificates of membership for the 2 G Society are interesting looking documents. The seal is about two inches in diameter, bears the front of the Rogers Building in relief on its face, and was designed and executed by I. W. Litchfield, '85, upon whom it reflects great credit. The motto at the base is the old German one of "Schlägel und Eisen." The society is in a prosperous condition and endeavors to afford substantial aid to the members in the study of mining engineering at the Institute.

The corps of cadets under Major Locke gave an exhibition drill in the gymnasium on Saturday, March 29. The battalion showed much improvement, and executed the various manoeuvres of battalion and company drill in good shape. After the drill, the balance of the afternoon was spent in dancing.

The students at the Institute interested in bicycling held a meeting recently which was largely attended. Considerable interest was shown and a club was formed with the following organization: President, Jas. C. Duff, '86; secretary and treasurer, T. W. Sprague, '87; captain, Edward H. Dewson, '85; 1st lieutenant, S. Sturges, '87; 2d lieutenant, Geo. F. Steele, '86; an executive committee, consisting of the president, secretary, captain, Messrs. Cochran, '85, and Steele, '87. The club promises to be a flourishing organization and a credit to the Institute.

Three miners were recently dropped from the mining laboratory because of neglect to hand in time cards.

"Zwischen Löffel und Mund,
Geht viel Suppe zu Grund."

[P. S. They have been reinstated.]

[We append the beginning of a new novel, translated from the German especially for THE TECH, but which, for obvious reasons, we are obliged to decline with thanks.]

"Although in January showed the thermometer 33°. During the night blew the wind very weakly out of the southwest; in the morning was the air clear, and the sun's rays fell burningly upon the ground, which, from the rain of the preceding day, yet a little moist was, when suddenly beheld I Fanchon — no, not Fanchon, but an etherealized beatification of Fanchon."

[We shall be glad if the author will call at room 18 for his MS. between 4.30 and 6 P. M.]

Mr A. Stuart Pratt, formerly of '84, left Boston March 24, amid the tears and good wishes of his friends, for the West. He is going on a cattle ranch in Nebraska.

The annual Senior Ball — without the Seniors — was given in Odd Fellows' Hall, Friday evening, April 4, by '85, '86, and '87, to '84. About seventy-five couples were present, and the affair proved a brilliant and thoroughly enjoyable one in all respects. It is to be regretted that so many of the Seniors chose to hide their gray heads elsewhere rather than show, at least by being present, their appreciation of the compliment tendered them. Mrs. John D. Runkle, Mrs. Webster Wells, and Mrs. William T. Sedgwick kindly acted as matrons for the party. The floor committee, to whom much credit for the complete success of the affair is due, consisted of T. W. Robinson, '84, F. G. Pratt, Everett Morss, and A. R. McKim, '85, Charles Wood, Theodore Stebbins, and S. R. Bartlett, '86, G. W. Davenport, A. L. Cushing, and H. C. Spaulding, '87. The orders, upon which the Institute seal figured prominently, were designed by Mr. Wood. J. Howard Richardson's orchestra furnished exceptionally good music, and Harvey Blunt laid the table.

Department Notes.

V. Meyer has recently separated from benzene oils a composition, to which he gives the name of Thiophen. The composition of this body is represented by the formula C_4H_4S ; it presents the closest analogy in general reactions with benzene, yielding a sulphonic acid, a methyl derivative, etc.; it reacts with diketones to form highly colored compounds. The further study of this interesting compound, now being carried on in Prof. Meyer's laboratory, is likely to lead to important results. (Berichte, xvi., 2968.)

Mr. John L. Williams, a mine inspector of the Reading Coal and Iron Company, has invented an improvement on the Davy Safety Lamp for miners by which the lamp can be quickly extinguished by means of a wick cover worked from the interior. When a body of gas suddenly makes its presence known, a failure to be able to extinguish the light quickly brings with it an explosion. As the miners will remember, the only means of reducing the flame in an ordinary Davy lamp is by means of a "pricker" worked from the outside.

We recommend to the miners an interesting article in the *Engineering and Mining Journal* for March 15 on the Durango Iron Mountain in Mexico. Some analyses of the ore show it to be remarkably rich,—the crude ore containing about eighty per cent of ferric and magnetic oxides, three per cent phosphorus, and only a fraction of one per cent of titanous acid.

The Western Union Telegraph Company (by a recent report) had, in 1883, 428,546 miles of wire strung upon 143,452 miles of poles, spread over this country in all directions, and these figures are constantly increasing.

It is rumored that the New York and New England Railroad intend putting on a five-hour train to New York, as soon as the double track is completed, which will be in the course of a few months. The distance to New York *via* the Air Line is only 215 miles, or 19 miles shorter than the Springfield route, and about 14 miles less than by the Shore Line. A track tank is being constructed near Putnam, so that engines may

pick up water while running; and it is said that trains will be run from Boston to Willimantic, the Air Line junction, a distance of 86 miles, without a stop. From a knowledge of the New York and New England road and its grades, which in places are sixty feet to the mile, we doubt the feasibility of the five-hour train, as it would necessitate a speed of about 47 miles an hour over the main portion, allowing a much slower speed over the heavy grades of the Air Line. Were it not for the numerous drawbridges at which the Connecticut law requires stops, a very high speed might be obtained over the New York, New Haven and Hartford Road, which is comparatively level. It is said that the New York and New England in double tracking will improve its grades somewhat.

The London *Graphic* says, "A prize of £2,000 has been offered in France for a discovery which shall enable electricity to be applied economically either as a source of heat, light, chemical action, mechanical power, or a means of transmitting intelligence. The competition is international, and will be open until December, 1887. The last use for the electric current, however, is to "age" wine, this desirable operation being effected in three hours for claret, and three days for newly distilled spirits. By this means also all impurities are removed.

The *Manufacturers' Gazette* notices a recent article in the Philadelphia *Photographer* concerning our new photographic laboratory, and hopes some of us may be enabled to apply photography to experiments on the strength of materials, showing the physical changes of the body under examination, and to the mechanic arts, as by studying cotton fibres and the dye stuffs and other materials incident to the manufacture of cotton cloth.

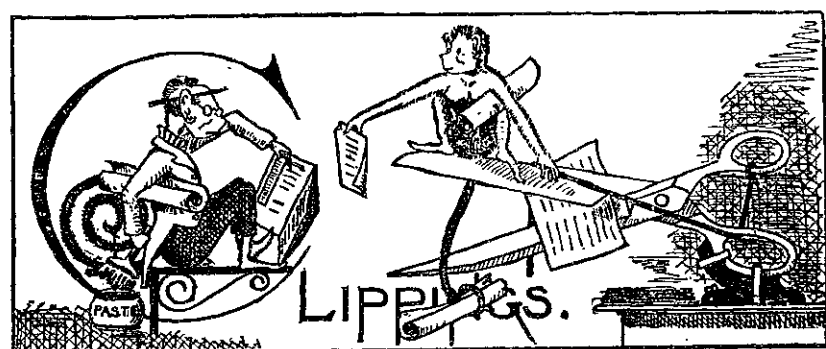
Some of the architects are experimenting on a new copying process. Paper is coated with a solution consisting of three parts acid chloride of iron and one part of cream of tartar in thirty parts of water. The exposure is made as in the common "blue process," and the print developed with dilute gallic acid, giving dark lines on a white ground.

The College World.

HARVARD. — The base-ball nine will consist substantially of the same men this year as last. Nichols and Allen have developed into an excellent battery. Still, handicapped as the team is by the Faculty rules, much improvement must be made in order to win the championship. — Tennis promises to be more popular than ever this year. — A University rifle team is talked of. — The Junior tug-of-war team won the class pulls. — Dr. Sargent has informed the captains of the class crews that they will be held responsible if any of the members of their crews are unable to swim. — Harvard has held the cup for intercollegiate athletics for four years.

PRINCETON. — Two hundred students of Princeton took part in the last city election, supporting and electing the Democratic candidate. This action was in retaliation for fines imposed by the Republican mayor on some of the students for breaking street lamps. *Ex.* — The treasurer of the Foot Ball Association shows in his accounts a total expenditure of \$1,912.04. The association has been self-supporting, having collected no subscriptions, and finished the season with a balance of \$2 26 in the treasury.

NOTES. — The Dartmouth Faculty have refused permission to the students to black up for minstrel performances during the term. — The athletic conference meeting at Columbia was well attended by representatives of the various colleges, but nothing important was done. We failed to see the need of the conference, any way. — Students of the University of Pennsylvania are discussing means to raise one hundred thousand dollars for a gymnasium. — Johns Hopkins has added an archæological society to its many features. — The *Michigan Argonaut* has appeared in a new cover, which is certainly *very* similar in colors to our own. Of course the change is an improvement. — The University of Vermont has received a bequest of \$110,000 for a new gymnasium. — More trouble has arisen at Hamilton. The Seniors say that the Faculty did not keep up to the agreements made upon their returning to college. — A class in Sanskrit has been formed at the University of Pennsylvania.



A SENSITIVE PLANT.

(Herr Pumpernickel, having just played a composition of his own, bursts into tears.)

Chorus of Friends. "Oh, *what* is the matter? What can we do for you?"

Herr Pumpernickel. "Ach! Nossing! Nossing! Bot ven I hear really *coot* music, zen must I always *veep*!" — *Punch.*

AN EXTRAORDINARY CASE.

She. "Only give up smoking for one year, and I have no doubt that you will never touch tobacco again."

He. "Well, I don't know; I did not smoke once for fifteen years, and then I began and enjoyed it hugely."

She. "For fifteen years! You must have been very young when you began."

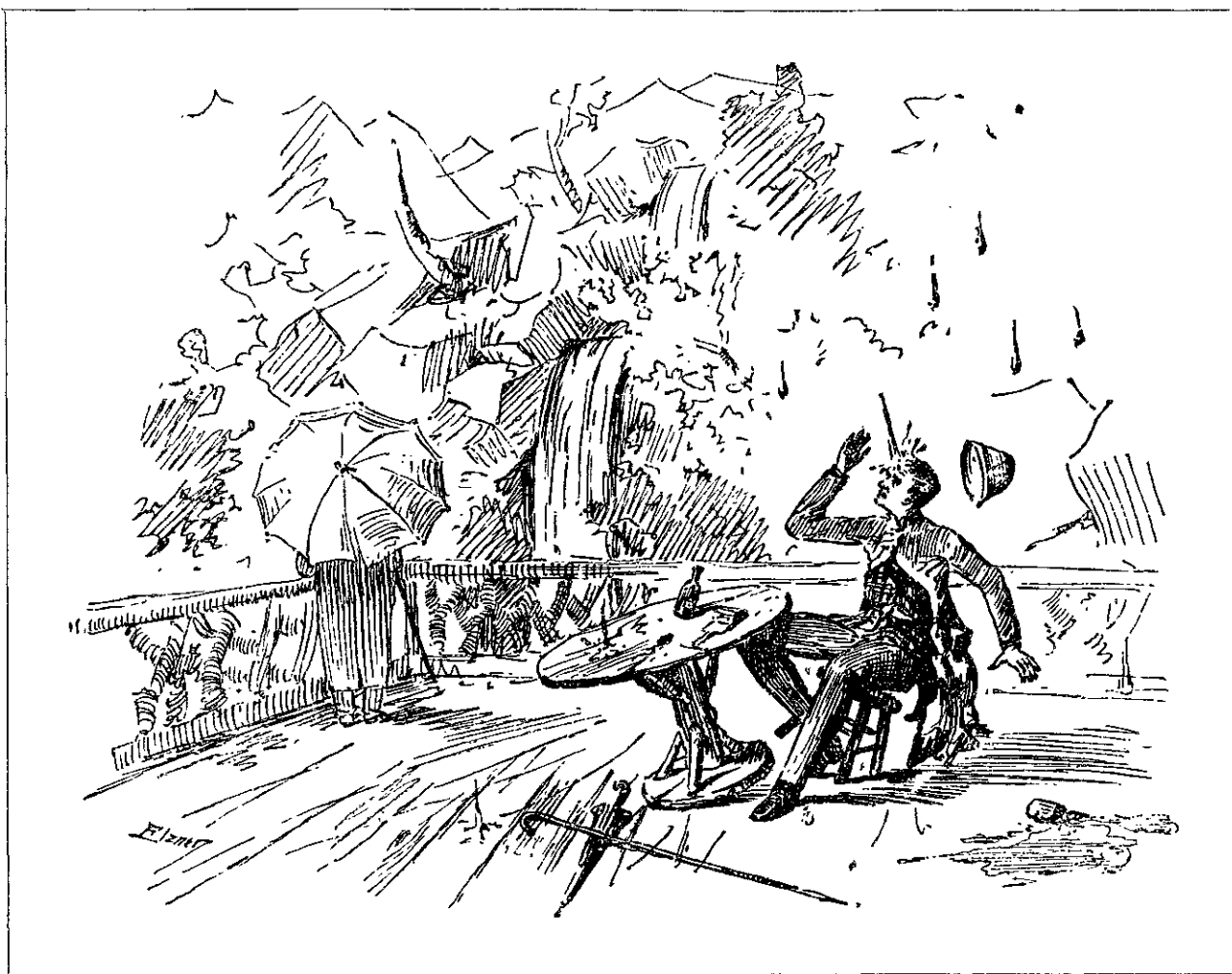
He. "I was fifteen." — *Life.*

IT'S NOT SO DIFFICULT TO SPEAK FRENCH,
AFTER ALL.

Mistress (fluently). "Oh — er — *Françoise*, il faut que vous alliez chez le chemist, dans High Street, pour le gargle de *Ma-lemoiselle Maud*; et chez le toy-shop, pour le Lawn-Tennis bat de *Monsieur Malcolm*; et n'oubliez pas mon waterproof, chez le cleaner, vis-à-vis l'Underground Railway Station; et dites à *Smithson*, le builder (dans Church Lane à côté der public house, vous savez), que le kitchen-boiler est — est — est —"

Françoise (who has been longer in England than her new mistress thinks). "Est burrrst! Très bien, madame." — *Punch.*

It is said that Salvini has abandoned his attempt to master the English language. That seems strange: he appeared to have the language pretty thoroughly broken when he was here. — *Cincinnati Saturday Night.*



"The Giessbach is one of the most beautiful cascades in Europe. The water, in falling from crag to crag, is thrown off in extremely large drops, frequently several inches in diameter." Lord Fitznoggin had heard of them in his lectures on Physical Geography, and had come to investigate the matter. While seated at his table among the trees, sipping beer, he was struck in the forehead by one of these stray drops, and had to be borne home on a shutter. — R.

A high old time — the sun.

Sole agent — the shoemaker.

Soul agent — the minister.

Sol agent — Gen. Hazen.

A pawnbroker is deserving of sympathy: he is a lone creature.

The Charge of the Light Brigade — the gas bill. — *Life*.

A new variety of ice-cream has appeared in London. It is called the "Mary Anderson."

Back-hair rushes between the Sophomores and Freshwomen are said to take the place of cane rushes in some of our contemporary female colleges.

In a "Bob-tail" Car. — Old gentleman (excitedly). "Didn't you know that was a fifty-cent piece I gave you that you put in the box?"

His vis-à-vis (calmly). "Oh, yas! but such a bore to make change." — *Life*.

Must Greek go? — A gentleman who studied Greek for the purpose of keeping his private journal in that language married a Vassar girl. He is now learning the Algonquin dialect.

CONCLUSIONS.

Pitman (to dignitary of the church). "An', se, warn't ye're a poor curate, noo, travellin' wi' the likes o' huz?"

Bishop (who thinks it right to travel third class occasionally). "I once was, my friend; but —"

Pitman (compassionately). "Ah! I see, — that wretched drink!" (Explanations.) — *Punch*.

Pretty Girl's Version of Pope. — "Beauty is drawn, dear, by a *single heir*!" — *Punch*.

"Tangibles and variables are the foundations of all science; possession is nine points of the law." — *Daniel Pratt*.

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Washington Street.

Stout pieces of "red tape" have been nailed over all the windows of the new chemical laboratory, as it was thought some of the miners might tumble out if the windows were permitted to be kept open.

Messrs. Goodnough and Thacher, both of '86, were initiated into *Γ. Σ. Υ.* at the last regular monthly meeting, held at the Quincy House, March 28.

The Freshman Class Society have adopted a unique society pin, consisting of a gold horse-shoe magnet, on which are placed the initials of the society, also in gold. On the armature of the magnet are inscribed the figures, '87.

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On Wednesday evening, March 26, one of the sections of the third-year class in applied mechanics, including the mechanicals, architects, and electricals, enjoyed a pleasant social gathering with several of their instructors at the house of Prof. Lanza. After promoting mutual friendship by conversation, all were invited to partake of a generous spread to which they did full justice. President Walker was present during a portion of the evening. The visitors, on leaving, showed their appreciation of Prof. Lanza's hospitality by a hearty M. I. T. cheer.

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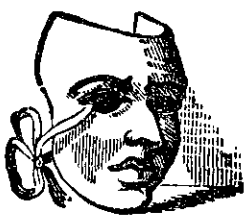
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Besides the above distinctly professional courses, the Institute offers scientific courses of a less technical character, designed to give students a preparation for business callings. A four-years' course in biology, chemistry, and physics has been established, as preparatory to the professional study of medicine.

Modern languages are taught so far as is needed for the ready and accurate reading of scientific works and periodicals, and may be further pursued as a means of general training.

The constitutional and political history of England and the United States, political economy, and international law are taught, in a measure, to the students of all regular courses.

Applicants for admission to the Institute are examined in English grammar, geography, French, arithmetic, algebra, and geometry. A fuller statement of the requirements for admission will be found in the catalogue, which will be sent without charge on application.

A clear admission paper from any college of recognized character will be accepted as evidence of preparation, in place of an examination.

Graduates of colleges conferring degrees are presumed to have the necessary qualifications for entering the third-year class in any of the regular courses of the Institute, and will be so admitted provisionally, on the presentation of their diplomas.

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Surveying instruments are provided for field work in civil and topographical engineering. Extensive shops have been fitted up for the use of both hand and machine tools; and a laboratory of steam engineering has been established as a part of the instruction in mechanical engineering. Several steam boilers and steam engines of various types are available for experiments and tests. The department of mining engineering and metallurgy has the use of laboratories in which the milling and smelting of lead, copper, silver, and other ores, in economic quantities, are regularly performed by the students themselves. The classes in architecture supplement the work of the drawing and designing rooms by the examination of structures completed or in course of erection, and by practical experiment in the laboratory of applied mechanics, testing the strength of materials and working out problems in construction. The Kidder Chemical Laboratories, just completed, contain desks for four hundred and twenty-six students, and afford the best modern facilities for the study of general, analytical, and organic chemistry. The Rogers Physical Laboratory has been greatly extended in every department during the past year, especially in respect to facilities for instruction and research in electrical science.

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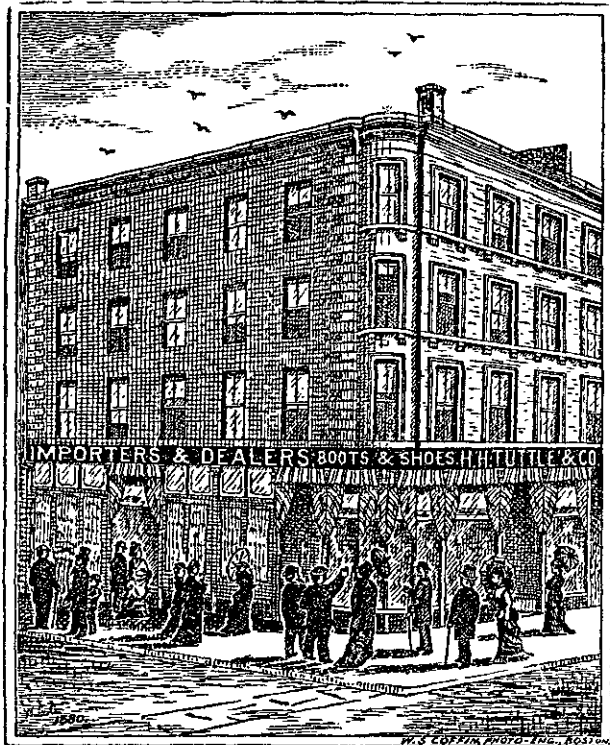
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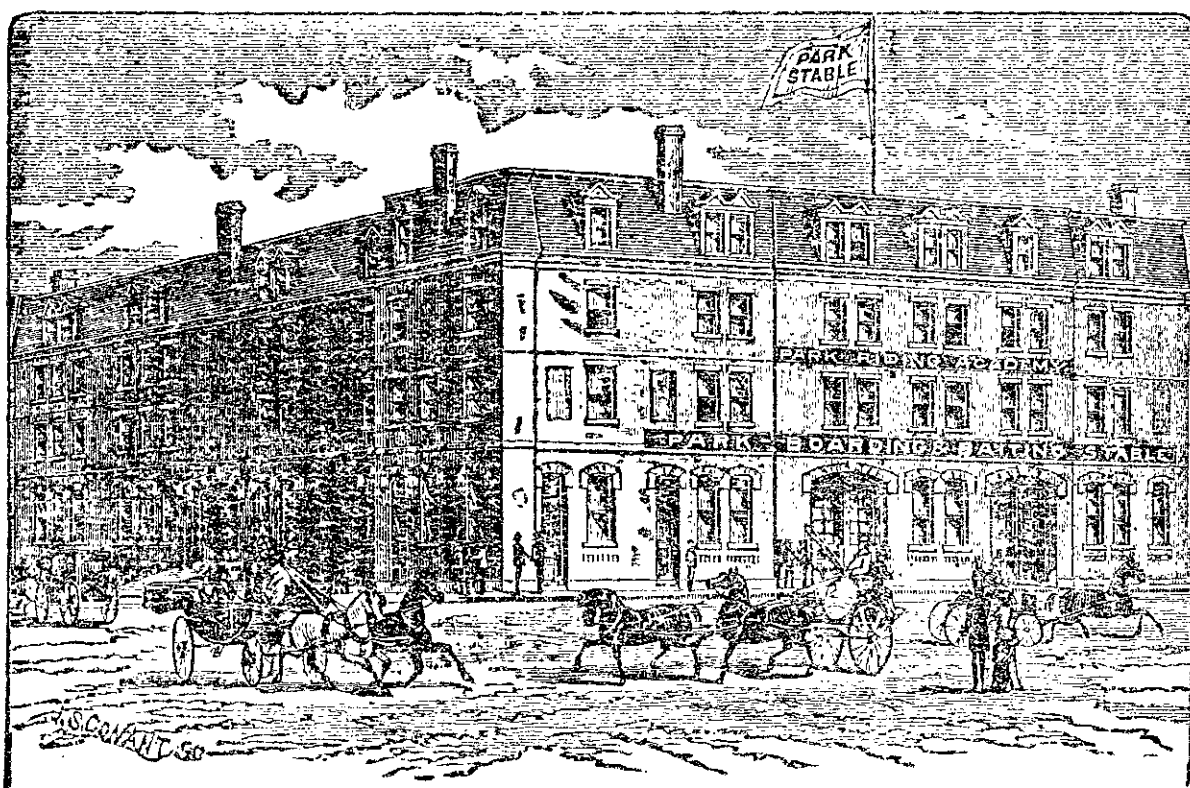
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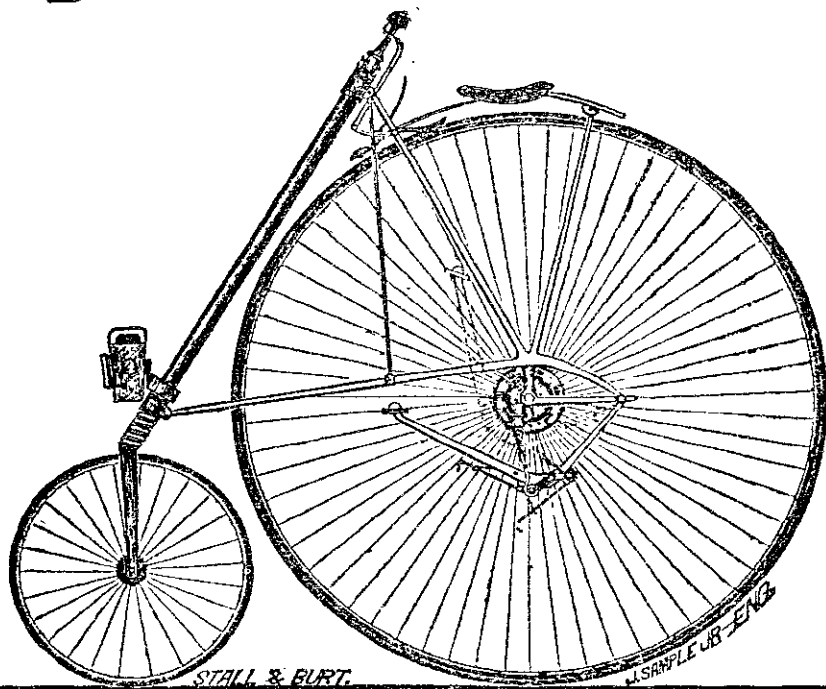
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